

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 15 SEP 2005

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Applicant's or agent's file reference JNU-840-SEN	FOR FURTHER ACTION		See Form PCT/PEA/416
International application No. PCT/IN2004/000067	International filing date (day/month/year) 22.03.2004	Priority date (day/month/year) 25.06.2003	
International Patent Classification (IPC) or national classification and IPC B22F9/14			
Applicant JAWAHAR LAL NEHRU UNIVERSITY			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
 - a. ☐ sent to the applicant and to the International Bureau a total of sheets, as follows:
 - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
 - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
 - b. ☐ (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand 25.01.2005	Date of completion of this report 16.09.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Ceulemans, J Telephone No. +31 70 340-



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IN2004/000067

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-16 as originally filed

Claims, Numbers

1-20 as originally filed

Drawings, Sheets

1/12-12/12 as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IN2004/000067

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	10,13-19
	No: Claims	1-9,11-12,20
Inventive step (IS)	Yes: Claims	13-19
	No: Claims	1-12,20
Industrial applicability (IA)	Yes: Claims	1-20
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rule 70.10)

and / or

2. Non-written disclosures (Rule 70.9)

see separate sheet

Re Item V.

- 1 The following document is referred to in this communication:

D1 : PATENT ABSTRACTS OF JAPAN vol. 0172, no. 08 (M-1401), 23 April 1993 (1993-04-23) -& JP 4 350107 A (SUMITOMO ELECTRIC IND LTD), 4 December 1992
D2: PATENT ABSTRACTS OF JAPAN vol. 0144, no. 24 (M-1024), 12 September 1990 (1990-09-12) -& JP 2 166202 A (ISHIKAWAJIMA HARIMA HEAVY IND CO LTD), 26 June 1990

2 INDEPENDENT CLAIM 1

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT. Document D1 discloses (the references in parenthesis applying to this document): a method for producing fine metal particles, whereby a DC source of 50V (see paragraph 17) is applied between a metal plate electrode (no. 4) and a metal wire electrode (no 5). The powder is formed by spark discharge between both electrodes. Both electrodes are immersed in a liquid medium, i.c. liquid nitrogen. Although the size of the particles has not been mentioned explicitly, for the person skilled in the art it is unmistakingly and undoubtedly derivable that the metal powder processed in D1 concerns nanoparticles, moreover, since all other processing parameters (voltage, wire diameter, choice of metals) are the same as in the present application.

2.2 DEPENDENT CLAIMS 2-11

Dependent claims 2-11, 20 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

The subject-matter of claims 2-9 and 11 has been revealed in D1 (see abstract and paragraphs 7-17).

The subject-matter of claim 10 (use of water as medium) has been applied in D2 for the same purpose. For a person skilled in the art it would not require inventive skill to combine the teachings of both D1 and D2 to come to the same solution as of the present claim 10.

3 INDEPENDENT CLAIM 12

3.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 12 is not new in the sense of Article 33(2) PCT. Document D1 discloses (the references in parenthesis applying to this document): an apparatus suitable for the production of metallic nanoparticles, comprising a reaction vessel (no.7), a first electrode mounted inside said vessel in the form of a plate (no.4) and a second electrode in the form of a wire (no.5), as well as a power source (DC, no.1).

3.2 DEPENDENT CLAIM 20

Dependent claim 20 does not contain any features which, in combination with the features of any claim to which it refers, meet the requirements of the PCT in respect of novelty (Article 33(2) and (3) PCT).

3.3 DEPENDENT CLAIMS 13-19

The combination of the features of dependent claims 13-19 are neither known from, nor rendered obvious by, the available prior art.

None of the cited prior art documents reveals or hints at the specific features or combinations thereof as disclosed in claims 13 to 19.

Re Item VIII.

Clarity (Art. 6PCT)

1 According to Article 6 PCT the claims have to be clear and concise. Claims 1, 5, 6, 11, 12 and 20 do not fulfil the requirements of Art.6 PCT for the following reasons :

1.1 The use of the term "suitable" in claims 1, 11, 12 and 20 is vague and imprecise and leaves the reader in doubt as to the meaning of the claimed subject matter (Art. 6 PCT).

1.2 The expressions "so as to" (claims 1, 2 and 12), "in order to" (claims 2 and 6) and "so that" (claim 12) relate to a result to be achieved without clearly stating the process step required to arrive at the envisaged result. According to the PCT Guidelines (ISPE/1, published 11/03/2004), Part II, Chapter 5, §5.35, this wording is not allowable in view of Art. 6 PCT.

- 1.3 Some of the features in the apparatus claim 12 ("containing said medium", "submerged in said medium") relate to a method of using the apparatus rather than clearly defining the apparatus in terms of its technical features. The intended limitations are therefore not clear from this claim, contrary to the requirements of Article 6 PCT (see also PCT Guidelines (ISPE/1, published 11/03/2004), Part II, Chapter 5, §5.37).
- 1.4 The reference in claim 2 to "step (ii)" is erratic and should read "step (iv)".
- 1.5 Claims 11 and 20 are not allowable since they do not contain any features related to the process or the apparatus, respectively, for which protection is sought.